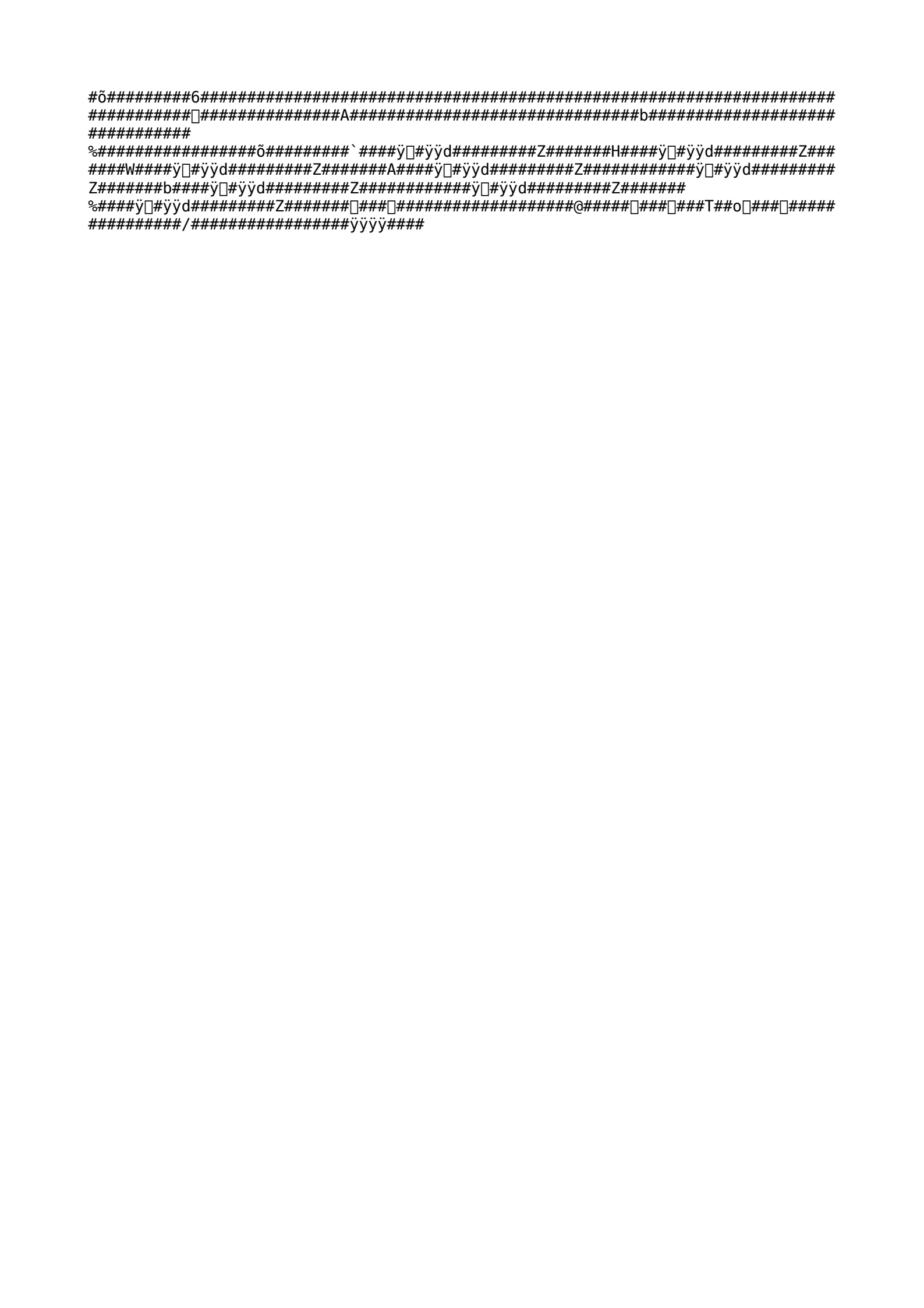

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#|###ACQUISITION REFORM WEEK 2□SUSTAINING THE MOMENTUM□WORKSHOPS 17-2 & 18-417 &
18 MAR 97David R. Graham and Dr. Ed Conrow
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###ÿÿ#####ÿ¥#ÿÿd#########d#########□###Good morning, I□ve been asked to speak briefly about Cost As an Independent Variable -- what that means, why we□re pushing it, and what we expect from it.The Defense budget now being worked and reworked in going to be less than $250B. While that□s a lot of money -- even in Washington -- it is enormously less than it was ten or even five years ago, and the bulk of the reductions have come from the personnel and procurement or recapitalization budgets. Further, the Congress and the American people are convinced of the need to balance the federal budget and that means further cuts to a budget within which we must learn to live.Just as you live within your personal family budgets, so must we. Therefore, we□re going to adopt some of the highly innovative and technically complex strategies you use in staying within your budgets -- like only buying what you can afford.Everyone here would like to live in a larger house with nicer furniture, better appliances, more luxurious cars and take nicer, longer vacations -- but you prioritize and buy the best you can afford, often looking long and hard, working sales and special opportunities -- That, in a nutshell is CAIV.ÿ

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#5#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#########ê###□Getting and keeping costs down□
□Government trades requirements while industry identifies cost/perf trade
opportunities□Industry, along with Govt, needs to develop life cycle cost
perspective to motivate cost/perf tradesIndustry needs to do life cycle cost
estimatesAs early as possible, MS 0, when leverage is highest□Operator-Acquirer-
Industry partners: maintain  communications between team members□□Single Process
Initiative (SPI) facilitates partnering□□Better, Faster, Cheaper□
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#S#ÿÿ####ÿÿ#####ÿ□#ÿÿd##########Z#########õ###□Deliver high quality weapon
systems at an affordable price□□Embedded savings due to AR will help pay for the
AF of tomorrow□□Three strategic goals□:□Reducing the cost of doing business -
avoiding scrap and re-work□ (Risk Management)□Reducing cycle time for acq by
50%□ (Streamlining)□Focus on life cycle cost management□ (CAIV)□Earliest
decisions have biggest payoffs□□Warfighter-Developer-Supporter work together□
□Must share common committment to AR to reach goals□□Better, Faster, Cheaper□#
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ç#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#########d###Defined by □Old World Order□ of monolithic Soviet threatPace of modernization driven by need to offset quantitative superiority of threat/threat weaponryNew systems had to equal or exceed projected threatWeapon systems normally replaced prior to end of technical service lifeStable or growing defense budgets required in response to external threats

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#####2##□##□ô×ú~#¼#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#########□###□...my principal
concern with the modernization program...we have a history of not meeting the
out-year increases in the modernization account□□...poor management of
procurement programs in the past have led to huge cost overruns, which took
money away from future programs□May lead to inability to realize AF Chief of
Staff□s □Air and Space Force□ vision for the 21st centuryProperly implemented
CAIV can help avoid failureEnhanced relationship between industry and DoD
Supported mergers and consolidations□...our best, objective estimates...have
saved the DoD a few billion dollars.  And we expect those savings to accrue into
the future□l
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###ÿÿ#####ÿ¥#ÿÿd#########d#########ª###Everyone here has been told that there are only three parameters in managing a program -- COST, SCHEDULE & PERFORMANCE. These are the three variables we have to manage in providing the CinCs with their systems. All three of these can be true variables, or we can change the any one or two of these parameter(s) to keep the remaining parameter constant (or nearly so).In the past, we have tried, mightily, to hold all three constant -- but that is a futile effort. This is not a perfect world, and a PM must have some ability to adjust program parameters to accommodate change, and the second law of thermodynamics guarantees change (that□s the one that says Murphy was an optimist -- even if you leave something alone, it will break). In trying to hold all three parameters constant, we imposed enormous burdens on our program management teams, both government and industry.Beyond that, based on our actions, not our words, we really didn□t mean all three parameters were fixed. When push came to shove, we added money, sometimes almost without limit, and then, when we came to the end of the limitless supply of money, we blamed the PM when the PM was the one person who had zero flexibility to adjust parameters to truly manage his program. He was sitting in a runaway train with both the break and the throttle locked.CAIV means that we will intentionally hold cost constant and accept the schedule and performance that results -- within limits of course. If you can only afford to buy performance that is patently inadequate for your needs then you must reassess your priorities, and the same applies to CAIV, but we will not try to buy $10 of performance for $2.50 as we sometimes have.

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#¯#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########U#########n###Very similiar to target costing in commercial businessPurpose is to contain cost and succeed commerciallyPrice goals based on market surveysCrucial to new product introductionImplementation of sound business practiceCost can no longer be considered an output parameter Unit cost now is design □input□Equal to any performance parameter in trade study analysis

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CAIV DOES NOT Mean Trading Cost, Performance and Schedule Equally!CAIV DOES Mean Picking the Right, Affordable Cost Goal, then Sticking To ItIf True Warfighter Needs Cannot Be Met After Exhausting the Trade Space:Raise Cost TargetsCancel the Program as Unaffordable Restructure the program through the trade-off processNote: These Should be Treated as a Major Milestone DecisionI

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%#|##############ÿ□#ÿÿd#########U######### ###Program Manager    - Assumes CAIV
responsibility and authority  - Understands customer affordability requirements
      - Approves DT$T1 goal recommendation System Engineering Manager  -
Recommends elimination of  unaffordable requirements - Challenges system level
specifications    - Conducts system level trade studiesDetailed Engineering
DesignImplements cost/perf trades at the detailed levelEnsures engineering and
manufacturing feasibilityBusiness Manager- Provides financial data     -
Provides calibrated cost models and procedures
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#ð###System analysis and control activities established to serve as a basis for evaluating and selecting alternativesRequirements shall be refined as a consequence of cost-schedule performance trade-offs during each phaseAdditional importance of supporting good O&S and force structure databasesAdditional and earlier cost support in developing affordable requirements and life cycle cost at minimum thresholdsLife cycle cost reductions accomplished through cost/performance trade-off analyses

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#################,##########################ÿ##ÿÿÿÿ########d#########2##□## ôõú□ #Ë#ÿÿ####ÿÿ#####ÿ»#ÿÿd#########Z#########6###Incentives stressed for CAIV, not for DTCHigher headquarters accept risktaking when potential for future payoff is highPromotion policies must recognize and reward not only success stories but also □best efforts□PM retain internally generated savings for use on program enhancements or improve SPO operationsUse competitionMultiple sources, component breakout, leader/follower, dual sources, etc.Sole source environment incentive structure for CAIVValue engineering, multiyear procurements, aggressive sharing of cost savings between government and contractor

#################,##########################ÿ##ÿÿÿÿ########d#########2##□## ´ôEû□#¼#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#############Promote Congressional acceptance to greater risk-takingAvoid penalizing failures that occur despite best management effortsAvoid using risks identified as a hammer against a programFoster environment that promotes goal setting, teamwork and recognition of accomplishmentsFor fielded systemsEstablish mechanism to encourage component funding of high-leverage system modifications to lower operating costsEstablish a formal annual awards board to reward individuals/organizations for innovations that reduce life-cycle costs

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###2##□##îõÙûâ    ç#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########7#########□###Allocate cost goal
      to 2nd, 3rd, and 4th    WBS level targetsAllocate bonuses   for meeting
cost  goals down to 2nd,      3rd, and 4th WBS  level targets     a
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#h#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#########J###Past Practice --- Some Major
Problem AreasStarting EMD/Production with Designs Dependent on Immature
TechnologyAllowing Edge-of-the-Envelope Performance Requirements to Become
SacrosanctDesigning for the Ultimate, Accepting the Resulting Cost as a
Necessary ConsequenceManagers hired for phases/contracts, not life cycleProduct
manufacturability and supportability not addressedPossible solution: Install
civilian deputy program managersTenure requirements in DAWIA statute; 5000.1R
(LCC Objs)Need to truly implement AF Core ValuesProperly Executing CAIV
Addresses All of These
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#Ë#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#########g###□INTEGRITY FIRST□□A person of
integrity possesses moral courage and does what is right even if the personal
cost is high.□□SERVICE BEFORE SELF□□...professional duties take precedence over
personal desires.□□EXCELLENCE IN ALL WE DO□□...demands that we aggressively
implement policies to ensure the best possible cradle-to-grave management of
resources.□#
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#□    ÿÿ####ÿÿ#####ÿ□#ÿÿd#########Z#########m###Life-cycle cost objectives
should be set for:ProductionOperations and Support (O&S)Aggressive cost
objectives:Should be challenging but realisticShould be defined as ranges
Increasingly more specific in subsequent acquisition phases (reduce range)
Typically entail risksProcess maturity, aggressive management and other
initiatives should lower overall risk#
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###ÿÿ#####ÿ#ÿÿd#########d#########t###The main point to CRIMS is expressed by the acronymn ITS - Identify, Track and Store. The preferred methodology for identification within CRIMS is the Relative Risk Weighting process where three technical risk profiles of a WBS element are scored and the scores used to develop ratios that are applied to the point estimate as multipliers to generate the high and low ends of a triangular distribution. Monte Carlo simulation is used to combine these distributions into a summary distribution from which a cost is selected for budgeting at some confidence level. After contract award, the govt and contractor work together in managing the cost-risk with the help of the earned value management system of the contractor. After the contract is over, initial estimates are compared with actuals and lessons learned are stored in a database for future evaluation and projections.

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bùÿÿ ###ÿÿ##7/#ÿ##ÿÿÿÿ########d#########J###Determining the Aggressive Cost
Objective#(ACO) by Relative Risk Weighting

###ÿÿ#####ÿ□#ÿÿd#########d##########\###The Relative Risk Weighting (RRW) process results in a monte carlo simulation with a summary Probability Density Function (PDF) and a summary Cumulative Distribution Function (CDF) from which costs are easily associated with confidence levels visually. These “S”-curves are generated at the proposal phase (by the contractors), mid-phase(s) and end-of-phase (by the IPTs) to indicate progress (hopefully) in increasing confidence around the “Aggressive Cost Objective”. If the government has done an analysis itself, then during source selection its “S”-curve can be used to compare with the offerors’.

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##ÿÿ####ÿÿ#####ÿ»#ÿÿd#########Z#########Ö###Begin Tracking Phase of CRIMSRisk
Feedback Management StrategyIntegrated Baseline ReviewWithin 6 Months of
Contract AwardGovt/Contractor IPT Tracks Using Earned Value Management Reports
(preferrably electronic)

###ÿÿ#####ÿ□#ÿÿd#########d##############The tracking phase of CRIMS, the Risk Feedback Management Strategy (RFMS), begins as soon as the contract is awarded. A cost IPT is formed with govt and contractor representation and a date for the Integrated Baseline Review (IBR) is set within six months. The cost IPT can project EACs for all the high risk elements identified during the RRW phase during this tracking phase and locate that point on the proposal □S□-curve. As the contract progresses the comparison will be made against the mid-phase □S□-curve.

###ÿÿ#####ÿ□#ÿÿd#########d#########□###At 3 months after contract award we don□t have a lot of faith in the data. There has not been an Integrated Baseline Review (IBR) so we don□t know how well the contractor has baselined the effort. We are getting some indications that there may be some cost growth (overruns depicted here due to the estimate at completion (EAC) being higher that the aggressive cost objective (ACO)) but we don□t want to jump to conclusions until the IBR. Whatever confidence level is associated with the ACO cost is the confidence level to which the program managers have had to convince the decision makers they can manage. They must be able to explain the risks they have identified, the plans they have to prevent or, at least, mitigate the risks and cost-risk possible, and demonstrate that they have a structured system for credibly tracking the cost-risk effects of risk prevention and risk mitigation. This monitoring system cannot prevent risks from occurring but may enhance the implementation of risk mitigation plans and, at least, will give indications of possible estimates at completion if trends identified continue. By identifying the possible cost impacts of risks being realized, project officers will be more motivated to implement risk mitigation or perhaps change the direction of the mitigation if the present path appears too costly. The recognition of cost impacts will serve as a focusing mechanism to take action.ÿ

###ÿÿ#####ÿ□#ÿÿd#########d#############At nine months after contract award the Integrated Baseline Review(IBR) has taken place and we can begin to really trust the data. We are seeing some cost growth (overrun in this case) which should flag the project managers that some cost/performance trades are in order.

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þ/üÿÿ####ÿÿ#####ÿ□#ÿÿd#########d#########D###~18 Months ACA - 2nd RRW (to
coincide with award fee determination)

###ÿÿ#####ÿ□#ÿÿd#########d#########U###At 18 months ACA we have an award fee determination. To assist us with this we perform another Relative Risk Weighting (RRW) analysis to establish a reduction in risk (denoted by the □S□-curve becoming more vertical). It also appears that the estimate at completion (EAC) is now lower than the ACO - a good sign that cost is under control.

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þ#üÿÿ####ÿÿ#####ÿ□#ÿÿd#########d#########D###~36 Months ACA - 3rd RRW (to
coincide with award fee determination)

###ÿÿ#####ÿ□#ÿÿd#########d#########Ã###At the 36 month point, and another award fee determination point, another RRW is performed confirming that the contractor is indeed lowering the risk. The EAC is consistently lower than the ACO.a

###ÿÿ#####ÿ#ÿÿd#########d#########ö###At the end of the effort the actual is lower than the ACO - a very good result. Our initial budget, identified at the 50% mark by tradition, is now seen as too conservative. This is also a good sign for the long term (not so good perhaps for the PM who ended up with too much money at the end, however) and means that acquisition reform is working, resulting in more programs for limited TOA. It appears that the program manager could have been much more aggressive in being a risk manager due to the actual final cost, overlayed on the original S-curve, being at about the 12% confidence level. This indicates empirically that AF managers can bring in programs at lower than 50% budgets, ensuring that scarce dollars be stretched further successfully.

#5#########5#####(###########5#########5####ÿ##ÿÿÿÿ########d#########2#####êõÙûæ ç#ÿÿ####ÿÿ#####ÿ#ÿÿd#########Z#########a###Risk management affects program cost:Funds needed to cover the known risks of the selected system approachCosts associated with specific risk handling activitiesCAIV requires that:Program funds support the level of accepted riskCost objectives include program risk management and cost estimatesNo DoD recommended CAIV or C/P tradeoff process flowsK

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###ÿÿ#####ÿ¥#ÿÿd#########d#########□###What can you do?Take this to heart, and use cost as THE independent variable in managing your programs. It's never to late to start, although reality says that on mature programs, the savings will be less dramatic.Our Acquisition Reform initiatives have opened the door for you to be as creative and innovative as possible and the IPT concept has opened up the resources of the service and OSD staffs for you the PEOs, DACMs and PMs to draw on, and I know that the SYSCOM Commanders are working hard to make sure that the functional support they provide to you on your lower level teams is the best support available. Surely, using the government and industry talent available, we can solve the equation and provide the CinCs with required performance at affordable prices. The key is CAIV and the discipline it brings to the system.Now, if there are any questions, I'd be happy to entertain them.

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      ÿÿ####ÿÿ#####ÿ□#ÿÿd#########U#########±###Are production and O&S cost
objectives included in RFP?Are the incentives for achieving cost objectives
included in the RFP and contract?Is a mechanism in place for contractor
suggestions to reduce production and O&S costs?Have key trade-off issues been
identified and addressed?Are risks to achieve cost objective identified and risk
plan completed?Are there appropriate tools and latitude for cost-performance
trade-offs?p
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